REMARKS

Reconsideration of the application is requested in view of the above amendments and the following remarks. Claims 1-3 have been amended to clarify the meaning of "a horizontal direction" and "a vertical direction," as well as clarifying the configuration of the slit. Support for the amendments to claims 1-3 can be found in at least Figures 1 and 2 of the present application. Changes made to the claims by the current amendment are shown in the attached "Version with Markings to Show Changes Made."

The title of the application has been amended as suggested by the Examiner.

Claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by Knox, U.S. 4,942,333. Applicants respectfully traverse this rejection.

By way of background with reference to Figure 6 in the present specification, when a shadow mask is stretched in the Y direction (in a direction in which lines of the apertures are directed), a local doming phenomenon occurs in which the aperture 13 is shifted in the horizontal direction (direction indicated by the arrow a). The local doming occurs due to the thermal expansion of the shadow mask (see page 2, lines 11-19 of the present specification).

The configuration of Figure 6 has at least one notable drawback. Since the apertures are not formed in the dead space 12, the degree of thermal expansion in the dead space 12 is larger than the expansion in the effective area 11 where the apertures 13 are formed. Thus, the aperture lines adjacent to the dead space 12 have a larger degree of movement due to the local doming phenomenon than the movement of apertures not adjacent to dead space 12 (see page 2, lines 20-25 of the present specification).

Claim 1 requires "a slit extending along said aperture line is formed in said dead space formed on both outer sides of said effective area in the direction perpendicular to the direction in which the apertures lines are directed, and the slit has a lengthwise direction that coincides with the direction in which the aperture lines are directed." A slit having this configuration effectively absorbs the thermal expansion, thus addressing the above-mentioned problem associated with local doming in a dead space of the shadow mask. In other words, a configuration having limitations according to claim 1 prevents the shift of the apertures in the horizontal direction, that is, the shift of the apertures in the direction perpendicular to the direction in which the aperture lines are directed.

Knox discloses in Figure 2 a dead space 15 that is formed on both sides of an effective area in a direction perpendicular to a direction in which aperture lines are directed (the right-left direction of Figure 2). Knox also discloses a mask 10 that is stretched and held in a direction of the aperture lines (the top-bottom direction of Figure 2), and slits 13 that are formed in a dead space 15 formed on the sides in the right-left direction. However, the slits 13 formed in the dead space 15 on the sides in the right-left direction have a lengthwise direction perpendicular to the direction of the aperture lines. Thus, Knox fails to disclose a configuration in which the slits have a lengthwise direction that coincides with the direction in which the aperture lines are directed, as required by claim 1.

Furthermore, Knox discloses a dead space that is arranged on sides in the top-bottom direction of Figure 2 in which the slits 13 are formed. These slits 13 have "a lengthwise direction that coincides with the direction in which the aperture lines are directed," as required by claim 1. However, the dead space on the sides in the top-bottom direction do not correspond with the "dead space formed on both outer sides of said effective area in the direction perpendicular to the direction in which the aperture lines are directed," as required by claim 1.

Therefore, Knox fails to disclose a configuration in which "a slit extending along said aperture line is formed in said dead space formed on both outer sides of said effective area in a direction perpendicular to the direction in which the aperture lines are directed, and the slit has a lengthwise direction that coincides with the direction in which the aperture lines are directed," as required by claim 1. In other words, since the lengthwise direction of the slits 13 formed in the dead space 15 on sides in the right-left direction are perpendicular to the direction of the aperture lines, the configuration disclosed by Knox fails to absorb thermal expansion in the horizontal direction and does not prevent aperture line of the effective area adjacent to the dead space in the horizontal direction from shifting in the horizontal direction.

Therefore, Applicants submit that Knox both fails to disclose every limitation of claim 1, and fails to address the problem solved by the configuration of claim 1. Withdrawal of the rejection of claims 1-4 is respectfully requested.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Knox in view of Barbin, U.S. 3,766,419. Applicants respectfully traverse this rejection. As discussed above, Knox fails to disclose every limitation of claim 1. Barbin fails to remedy the deficiencies of Knox as it relates to claim 1. Therefore, claim 5 is allowable for at least the reason it is

dependent upon an allowable base claim. Applicants do not concede the correctness of this rejection.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

Title of the application has been amended as follows:

CATHODE RAY TUBE WITH SLIT IN DEAD SPACE OF SHADOW MASK

In the Claims

Claims 1-3 have been amended as follows:

1. (Once Amended) A cathode ray tube comprising a shadow mask [having], the shadow mask including:

an effective area in which a plurality of aperture lines having a plurality of apertures for passing electron beams are arranged via a bridge, and

a dead space formed on both outer sides of said effective area [in a horizontal direction] in a direction perpendicular to a direction in which the aperture lines are directed, and

[a plurality of aperture lines having a plurality of apertures for passing electron beams being arranged via a bridge in said effective area, and]

the shadow mask being stretched and held [in a vertical direction] in the direction in which the aperture lines are directed,

wherein

a slit extending along said aperture line is formed in said dead space formed on both outer sides of said effective area in the direction perpendicular to the direction in which the aperture lines are directed, and

the slit has a lengthwise direction that coincides with the direction in which the aperture lines are directed.

2. (Once Amended) The cathode ray tube according to claim 1, wherein a [horizontal] width of said slit in the direction perpendicular to the direction in which the aperture lines are directed is from 45 % to 100 % of a [horizontal] width in the same direction of said aperture adjacent to said dead space.

3. (Once Amended) The cathode ray tube according to claim 1, wherein a [vertical] length of said slit in the direction in which the aperture lines are directed is equal to or longer than a [vertical] length in the same direction of said aperture adjacent to said dead space.